THE MANUFACTURE OF CLOTH.

In the present limited and daily declining condition of the woollen manufacture in Ireland, so few individuals in the country can be acquainted with the mode of preparing the clothing of the sheep, and altering its form so as to make it suitable and fit for the clothing of man, that we deem a short account of the various processes through which it passes may be acceptable to many of our readers.

When the sheep-shearer has taken off the fleece, he ties it up in a peculiar knot, which is not opened again until the wool-sorter takes it in hands. It is his business to open it, and having spread the fleece upon a table, and cast his eye over it, he separates it into the number of sorts required, the wool being of different degrees of fineness upon different parts of the animal. The coarse qualities of fleeces, from which low descriptions of cloths, kerseys, blankets, and friezes are made, are seldom divided into more than three sorts, the finer into four or five, and the finest Saxony into seven, eight, and sometimes nine. With the latter we have little to do in this country, there being but *one* factory (that of Messrs Willans) where it is worked; and we shall therefore merely follow the progress of a piece of ordinary coarse cloth, there being but little difference between it and the finest in the general detail: indeed very little at all, except in the additional care and expense.

The sorted wool having been carefully examined by women, and freed from straws and motes, is taken to the scouring department attached to the dye-house, where it is immersed in a hot ley with soap, and well scoured, after which it is washed in clean water and left to drain.

It is then coloured, and either allowed to drain, or the colouring matter is wrung out, and it is again washed in water until the water runs from it unsullied. The apparatus in which it undergoes this process is called "the washing-box:" one side and the bottom being of metal perforated with innumerable small holes, the water has free ingress and egress, whilst the wool is securely retained. Having been thoroughly cleansed, it is taken to the drying-loft, if the weather be fine, or to the stove if it be unfavourable, and there perfectly dried. From thence it is carried to the factory, and placed in the first machine called "the willow," or more generally "the devil"—a machine formed of five or six cylinders of different sizes, armed with steel spikes three or four inches long: the motion of the cylinders being contrary, the spikes pass between each other, tearing the wool open if it should have clotted or got into lumps. Cheviot and Scotch wools, and wools damaged by shipwreck, must be *willowed* before they can be even scoured, in consequence of their being always matted.

The willow, and all the machines which shall be subsequently mentioned in this paper, are driven by the water-wheel or steam-engine—in this country almost uniformly by the former. Having been thoroughly opened by the willow, the wool is spread upon a floor and oiled, about a quart of fine olive oil being the proportion to every stone weight of wool. The effect of the oil is to cause the fibres of the wool to separate more easily upon the carding-machines, and prevent the too rapid wearing of the cards.

The next machine that takes up the work is called "the teazer:" it has a greater number of cylinders than the willow, with shorter teeth, about an inch in length, and hooked, and some of the cylinders have coarse wire cards. Having passed twice or thrice through the teazer, the wool is transferred to that part of the mill called, by way of pre-eminence, "the machine-room," where the great scribbling machines, or, as they are styled, "scribblers," are placed. These machines have a great number of cylinders of different sizes covered with wire cards of various degrees of fineness, so arranged that they take the wool from one another, separating the fibres, and transferring it until it has passed quite over every cylinder, and is carded out at the farther end of the machine (sixteen or eighteen feet from where it was put in) in a thin flake like gauze. Having been run through two or three scribblers of various fineness, it is passed to the carding machine, or "carder," which resembles the "scribbler," but is smaller, and instead of the wool falling out at the end in a flake, it is caught by a fluted cylinder of wood, which, revolving in a semi-cylindrical box, divides and converts it into separate soft rolls, about the thickness of ordinary sash rope; and these are thrown out upon a sheet of canvass stretched horizontally upon rollers, which from its slowly moving, so as to prevent one roll from falling upon another, is called "the creeper."

The rolls are taken to "the billy," a sort of preliminary spinning-machine, sometimes worked by the water-wheel, but (as yet, especially in Ireland) more generally by a man called a "slubber," who is enabled by it to form from fifty to one hundred threads at a time, children being employed to stick the ends of the rolls together, which is done by lapping a small portion of the tip of one on the other which lies on the "billy-sheet," and then giving them a slight rub. The soft thick thread which the slubber forms is made up in conical rolls or "cops," and is taken to the spinning-machine, "the mule," which has now quite superseded the spinning-jenny, which in its day superseded the spinning-wheel. The wheel could spin only one thread at a time: the jenny was first made to spin thirty, then forty, then fifty, sixty, seventy, and eighty threads at once, by a man's hand. By the "mule," worked by water, a man can now spin from five hundred to one thousand threads of woollen yarn, and of cotton two or three thousand, at once.

The thread for the warp is taken from the mule to the "warping-mill," where it is prepared according to the number of threads for the breadth of the cloth, the length arranged, and being tied up in a peculiar kind of ball, it is called a "warp," and is taken to the sizing shop, where it is dipped in melted size; and having been opened, perfectly saturated, and wrung out gently, it is carried to the field, or stove, to be dried. The weaver then fixes it in the loom, and procures the "weft" thread, which is spun differently from the warp, and is wound upon wooden bobbins; having wetted these in water, he fixes one in his shuttle, and the threads of the warp being lifted alternately, and the shuttle shot between them, the beam of the loom strikes each thread home, and in due time the piece is woven. A good weaver with a sound warp can weave in a hand-loom from six to nine yards of cloth in a day, but with the new power-loom he can weave twenty.

The cloth when taken out of the loom is examined by the overseer, and having been passed and dried, is taken to the "scouring-machine," where it is submitted to the action of a strong ley, with fullers'-earth, &c., and worked by the rollers of the machine until both the oil and size have been extracted; it is then washed clean with water, taken out, and dried. It is next transferred to the tuck-mill, where it is spread out, a large quantity of melted soap poured upon it, and being rolled up in a peculiar manner, it is placed in "the stock," where two huge hammers made of oak, weighing from two to three cwt. each, called "stock-feet," being raised by a wheel and then let go, fall upon it alternately, until the soap has been forced through every part of it, and the cloth has narrowed, or, to speak technically, "milled in," a half yard or three quarters, and shortened a fourth or fifth of its length, when it is pronounced to be "milled." It is then again placed in the "washing-machine," washed clean, and transferred to the "gig-mill." The "gig" is a machine having a large cylinder in which teasles, a vegetable production somewhat resembling thistle tops or burs, are set, and the wet cloth being dragged by a set of rollers against the hooked spikes of the teasles, whilst the cylinder in which they are set goes rapidly round in a contrary direction, a portion of the short fibres of the wool have one of their ends disengaged and exhibited upon the surface of the cloth, forming what is called the pile or face: this process is called "raising." When the piece has been sufficiently raised, it is taken to the "tenter field," and stretched on frames called "tenters," by means of hooks, to the proper length and breadth, and it remains thus until thoroughly dried, when it is carried to the "shearing loft," where immense shears or machines called "knives" are passed over the surface, cutting all the wool on the face to an equal length. One of the improved knives can do as much work as twenty hand-shearers did formerly. Having received what is technically called a "cut" or two, it is returned to the gig mill to be "struck," that is, "raised," or submitted to the action of the gig in a dry state, and it then goes back again to the shear loft, and receives three or four more cuts on the face. It is then passed to the "burlers," women who pick out all motes that have accidentally clung to or become embodied in the cloth, with steel pincers having very sharp points called "burling irons."

If it is to be finished by being napped, that is, to have the surface covered with little knots, as petershams and women's cloaking, it is taken to the "napping engines," where it is submitted to the action of a board curiously covered with sand, so firmly attached as not to wear off for a considerable time; this is wedged down upon the cloth, and then set in motion,

describing small circles whilst the cloth is forcibly drawn from under it by a strong roller, and thus the whole surface is covered over with little knots; having been passed through the napping engine three or four times, it is returned to the shear loft to get one or two cuts on the back, thence again to the napping engine, where it receives a final run or two, and is passed to the wareroom to be measured and made up.

But if it is to be finished as a cloth, instead of the napping-engine it is sent to the steam-brushing mill, where it is passed against a revolving cylinder covered with brushes and teasles alternately, and working within a case, into which a stream of steam rushes constantly; thence it passes to another machine nearly similar, but having brushes only. Having undergone this process for several hours, it is dried, taken again to the shear loft and properly cut, then carefully "burled" and brushed, again to the "knife," where it is "backed," that is, cut or shorn on the back, and then brushed again, preparatory to being placed in the press, in which it is arranged in neat folds, with thin pasteboard called "presspaper" between the folds, and hot metal plates at intervals. The press is then screwed down, and after a proper lapse of time the cloth is taken out, the folds altered in order that every part may be properly pressed, and again screwed down. It then goes to the brush-mill for the last time, from whence the measurer at length gets it to make up.

Fine cloth sometimes undergoes another process called "singeing," in which it is passed over hot cylinders; but as our object is merely to give a general idea of the complicated processes of the manufacture to our readers, and not to make them at once masters of the business, we do not think it necessary to go into very minute detail. The entire length of time occupied may be estimated at from one to nearly two months.

The machinery in the woollen factories of Ireland is certainly inferior to that of our English neighbours, and the decline of the trade renders improvement difficult, if not altogether hopeless. Power-looms for the weaving of woollen cloth, so generally at work at the other side of the Channel, have been only this year introduced for the first time to this country by Mr Moore, proprietor of the Milltown factory near Dublin; and that Irish mechanists are not inferior to any others, is evidenced by the fact that the power-looms erected at Milltown are vastly superior to those imported, and which were on the most improved construction. Whether the experiment will have any effect in reviving this sinking business, remains to be seen; but it is much to be feared that as a great branch of trade it has deserted our shores altogether; certain it is, that the great factory at Celbridge (within ten miles of Dublin), which was dismantled about five years since, employed so lately as the year 1829 more looms than are now (1840) at work in the whole county of Dublin, probably in the entire province of Leinster, and yet the introduction of machinery could be effected much more easily in Ireland than almost any where else, in consequence of the absence of a manufacturing population, whose interests might be so compromised as to make them adverse to such change, and water power, so much cheaper than steam, is both abundant and unemployed.

N.

ENIGMA,

BY P. M'TEAGUE, ESQ.

Who or what am I, that, dwelling amongst the most humble, can associate with the highest? I am low in the scale of rank, but at the head of my race, and the most ancient of my tribe; the offspring and representative of want, and despised by multitudes, yet of regal descent. I have the likeness of woman and man, but I am neither man nor woman. I have neither father nor mother, and I am childless. I have the appearance of a potentate, yet I am not a potentate, but the companion of the lowly, and their most frequent visitor and guest. It is my destiny to live equally in palaces and farm-houses, jails and hovels. I am a traveller, though one who is always obliged to journey blindfold, and sometimes bound in cords with vulgar companions, and strictly guarded.

No creature undergoes greater vicissitudes. I am the attendant of most that walk, sail, and ride. I am attached to the pedestrian, yet generally kept in confinement; or when at times liberated, exposed to the rudest scoffs and sports of the vulgar, who toss me up in the air, pelt me with sticks and stones, tumble me on the earth, and stamp on me; and if I am raised again, it is either to endure a repetition of insult, or administer to the cupidity of vagabonds.

Though I never push myself forward, I have a face of brass, and yet my eyes can never look you straight in the face. I am fickle and changeable as the wind, yet I am a friend in adversity, and never desert those who do not first discard me. I may be the first to leave you; but in the hour of your utmost necessity you will acknowledge with a sigh *that I have been the last to desert my post.*

I am frequently trusted, though I often betray. How many petitions may have been offered up to heaven for my coming, no man living can tell, and yet I appear every where.

I have been in the earth, I have been in the sea, I have been in the air, I have been in the fire, and can endure unhurt, and with fortitude, greater extremities of heat and cold than any mortal. All the blows in the face I have ever received have never made me move a muscle. I have been crushed, but am sound and whole; and notwithstanding the contempt with which I have been treated (thanks to the present feelings of the age), am more and more respected every day—sought after indeed with eagerness, though seldom long retained. I am the beloved of schoolboys, but as quickly discarded by them. I attend churches and chapels, fairs and markets; yet though a friend and supporter of the Bible and many pious institutions, I am a heathen in religion, nor can I partake of any thing which I buy. Though my letters may be read by every body, I can neither read nor write. I am a proud stickler indeed in the school of aristocracy, for I never move out of my own circle; and with my associates, both male and female, am often nearly squeezed to death, according to the highest forms of fashionable usage.

I have given birth to hundreds of thousands, and with me fortunes invariably expire. My existence may continue for a thousand years, nay, to the very end of time, and yet may be cut short in a moment. But if you destroy me, which it is certainly in your power to do, know that innumerable myriads are at my back, and always ready to replace me.

Though committing no offence, I am liable to transportation without even a trial, but I am always well received after my return from exile. A master of all languages, but speaking none, I find my way in foreign countries without difficulty, for, though speechless, I am eloquent enough in my own way. From my features and head-dress you might suppose that I belonged to some Indian tribe, but I am British and Irish all over, and flourish best upon my own soil. I am an ever-welcome friend to the forlorn, but am myself very poor. I have a mint of money at my back, but am not worth three half-pence. At the moment you are reading this, you will indeed be wretched if you cannot command my services.

And now, having by the unwearied diligence, talent, and influence of Mr Rowland Hill, been enabled to give myself up for the support and encouragement of the Irish Penny Journal, I hereby particularly enjoin it upon all my brethren more and more to patronise that excellent work.

Irish Bravery.—The following instance of Irish bravery, recorded in Falkner's Journal, March 18, 1760, is too remarkable to be buried in oblivion:—"On Saturday last, arrived at Youghal the ship *Good Intent*, belonging to Waterford, but last from Bilboa: she was taken the Tuesday before by a French privateer off Ushant, and had on board ten or twelve hands, her lading brandy and iron. The French took away the master (Bongar), and all the men, except five and a boy. On Friday last, four of them (the fifth not consenting) formed a plan to surprise the nine Frenchmen who were navigating the vessel to France, and succeeded therein. Four of the Frenchmen were under deck, three aloft, one at the helm, and the other man near him: three of the Irishmen were under deck, one at the helm, and the fifth hiding. One Brien by surprise tripped up the heels of the Frenchman at the helm, seized his pistol, and discharged it at the other, at the same instant making a signal for his three comrades below to follow his example: they assailed the Frenchmen, and by getting at their broadswords soon compelled them to be quiet; and immediately getting above, shut the hatches. After a desperate cut which one of the Frenchmen received on the arm in defending his head, and another a bruise by throwing the pistol at his head after it was discharged (for he missed him), those above likewise called out for quarter, and yielded up the quarterdeck to the intrepid Mr Brien. Not one of these fellows could read or write; of consequence they knew not how to navigate the ship, but Brien said that as